CONTENTS OF VOLUME 27

NUMBER 1

R.A. HEFNER III	1	The age of energy gases
K. OTSUKA, Y. SHIGETA and S. TAKENAKA	11	Production of hydrogen from gasoline range alkanes with reduced CO_2 emission
T. BAK, J. NOWOTNY, M. REKAS and C.C. SORRELL	19	Photo-electrochemical properties of the TiO_2-Pt system in aqueous solutions
L.G. ARRIAGA and A.M. FERNÁNDEZ	27	Determination of flat band potential and photocurrent response in (Cd,Zn)S used in photoelectrolysis process
V.M. AROUTIOUNIAN, V.M. ARAKELYAN, G.E. SHAHNAZARYAN, G.M. STEPANYAN, J.A. TURNER and O. KHASELEV	33	Investigation of ceramic $Fe_2O_3\langle Ta\rangle$ photoelectrodes for solar energy photoelectrochemical converters
T. VÅLAND, T. BURCHARDT and T. GRØNTOFT	39	Structure and catalytic behaviour of NiS_x films with respect to the hydrogen evolution
R.N. SINGH and B. LAL	45	High surface area lanthanum cobaltate and its A and B sites substituted derivatives for electrocatalysis of O_2 evolution in alkaline solution
J. MA, H. PAN, C. CHEN and Q. WANG	57	Effect of heat treatment on the microstructure and electrochemical properties of AB_5-type $MlNi_{3.60}Co_{0.85}Mn_{0.40}Al_{0.15}$ hydride alloy: 1.—The microstructure and P-C isotherms
Y. CHEN, C.A.C. SEQUEIRA, X. SONG, R. NETO and Q. WANG	63	Polytypism of La–Ni phases in multicomponent AB_5 type hydride electrode alloys
H. NIU and D.O. NORTHWOOD	69	Enhanced electrochemical properties of ball-milled Mg_2Ni electrodes
M.D. HAMPTON, J.K. LOMNESS and L.A. GIANNUZZI	79	Surface study of liquid water treated and water vapor treated $Mg_{2.35}Ni$ alloy
I.P. JAIN, Y.K. VIJAY and M.I.S. ABU DAKKA	85	Electrical resistance variations with content of hydrogen in bulk $MmNi_{4.5}Al_{0.5}$
R.J. ELIAS, H.L. CORSO and J.L. GERVASONI	91	Fundamental aspects of the Ti–H system: theoretical and experimental behaviour
O. YÉPEZ and B.R. SCHARIFKER	99	Oxidation of formate on hydrogen-loaded palladium
Announcements	107	Hydrogen Energy Progress XII
	108	Solar Hydrogen Energy - The POWER to save the Earth
	109	Bihhydrogen 2002
	110	Eurosummer School: Sustainability Assessment of Hydrogen Energy Systems

	111	XIV World Hydrogen Energy Conference
	112	4th International Symposium on Electrocatalysis-From Theory to Industrial Applications (ECS 02), Como, Italy, 22-25 September 2002
	113	International Association for Hydrogen Energy

NUMBER 2

T. HIJIKATA	115	Research and development of international clean energy network using hydrogen energy (WE-NET)
R.C. DANTE, L.P. GÜERECA, L. NERI, J.L. ESCAMILLA, L. AQUINO and J. CELIS	131	Life cycle analysis of hydrogen fuel: a methodology for a strategic approach of decision making
P.K. SHUKLA, R.K. KARN, A.K. SINGH and O.N. SRIVASTAVA	135	Studies on PV assisted PEC solar cells for hydrogen production through photoelectrolysis of water
A. LOPÉZ ALANIS, J.R. VARGAS GARCÍA, R. RIVERA and S.M. FERNÁNDEZ VALVERDE	143	Protective rhutenium thin films on $CuInSe_2$ for hydrogen evolution in acidic media
B. FABIANO and P. PEREGO	149	Thermodynamic study and optimization of hydrogen production by *Enterobacter aerogenes*
O. SAVADOGO	157	On the concept of synergetic systems of composite or modified materials and their electrocatalytic properties: (1) General approach
I. KWON, H. PARK and M. SONG	171	Electrochemical properties of $ZrMnNi_{1+x}$ hydrogen-storage alloys
S. FUKADA, M. SAMSUN-BAHARIN and H. FUJIWARA	177	Hydrogen absorption–desorption cycle experiment of Pd–Al_2O_3 pellets
R.L. MILLS and P. RAY	183	Spectroscopic identification of a novel catalytic reaction of potassium and atomic hydrogen and the hydride ion product
F.L. DARKRIM, P. MALBRUNOT and G.P. TARTAGLIA	193	Review of hydrogen storage by adsorption in carbon nanotubes
A. ZÜTTEL, P. SUDAN, PH. MAURON, T. KIYOBAYASHI, CH. EMMENEGGER and L. SCHLAPBACH	203	Hydrogen storage in carbon nanostructures
Y. ZHENZHONG, W. JIANQIN, F. ZHUOYI and L. JINDING	213	An investigation of optimum control of ignition timing and injection system in an in-cylinder injection type hydrogen fueled engine

Ç. GÜLDÜR and F. BALIKÇI 219 Selective carbon monoxide oxidation over Ag-based composite oxides

Erratum
I. SHECHTMAN 225 Erratum to "Hydrino theory—a proposed amendment" [Int. J. Hydrogen Energy 2001; 26(11): 1227–8]

Announcements

225 Hydrogen Energy Progress XII

226 Bihhydrogen 2002

227 Hydrogen Energy Progress XIII

228 Eurosummer School: Sustainability Assessment of Hydrogen Energy Systems

229 Our Future is Hydrogen

230 XIV World Hydrogen Energy Conference

231 4th International Symposium on Electrocatalysis-From Theory to Industrial Applications (ECS 02), Como, Italy, 22-25 September 2002

232 Solar Hydrogen Energy – The POWER to save the Earth

233 International Association for Hydrogen Energy

NUMBER 3

S. DUNN 235 Hydrogen futures: toward a sustainable energy system

I. DINCER 265 Technical, environmental and exergetic aspects of hydrogen energy systems

Y.F. ZHU, H.G. PAN, M.X. GAO, J.X. MA, S.Q. LI and Q.D. WANG 287 The effect of Zr substitution for Ti on the microstructures and electrochemical properties of electrode alloys $Ti_{1-x}Zr_xV_{1.6}Mn_{0.32}Cr_{0.48}Ni_{0.6}$

H.-S. KIM, T. ITOH, M. NISHIZAWA, M. MOHAMEDI, M. UMEDA and I. UCHIDA 295 Microvoltammetric study of electrochemical properties of a single spherical nickel hydroxide particle

R.L. MILLS and P. RAY 301 Spectral emission of fractional quantum energy levels of atomic hydrogen from a helium–hydrogen plasma and the implications for dark matter

T. BURCHARDT 323 The effect of deposition temperature on the catalytic activity of Ni–P alloys toward the hydrogen reaction

S.S. FANG, G.W. LIN, J.L. ZHANG and Z.Q. ZHOU 329 The maximum solid solubility of the transition metals in palladium

A. JUAN, L. MORO, G. BRIZUELA and E. PRONSATO 333 The electronic structure and bonding of an hydrogen pair near a FCC Fe stacking fault

K.-I. SOTOWA, Y. HASEGAWA, K. KUSAKABE and S. MOROOKA 339 Enhancement of CO oxidation by use of H_2-selective membranes impregnated with noble-metal catalysts

S.Y. QIAN, B.E. CONWAY and G. JERKIEWICZ 347 Authors' response to comments by A. Lasia on the paper—Comparative effects of adsorbed S-species on H sorption into Pd from UPD and OPD: a kinetic analysis

Announcements

349 Hydrogen Energy Progress XII

350 Solar Hydrogen Energy - The POWER to save the Earth

351 Eurosummer School: Sustainability Assessment of Hydrogen Energy Systems

352 Market Challenges of Fuel Cell Commercialisation

353 XIV World Hydrogen Energy Conference

354 4th International Symposium on Electrocatalysis From Theory to Industrial Applications (ECS 02), Como, Italy, 22-25 eptember 2002

355 International Association for Hydrogen Energy

NUMBER 4

Y. BESSEKHOUAD and M. TRARI 357 Photocatalytic hydrogen production from suspension of spinel powders AMn_2O_4(A = Cu and Zn)

A. KOCA and M. ŞAHIN 363 Photocatalytic hydrogen production by direct sun light from sulfide/sulfite solution

H. OHYA, M. YATABE, M. AIHARA, Y. NEGISHI and T. TAKEUCHI 369 Feasibility of hydrogen production above 2500 K by direct thermal decomposition reaction in membrane reactor using solar energy

J.K. DAHL, V.H. BAROCAS, D.E. CLOUGH and A.W. WEIMER 377 Intrinsic kinetics for rapid decomposition of methane in an aerosol flow reactor

T.V. RESHETENKO, S.R. KHAIRULIN, Z.R. ISMAGILOV and V.V. KUZNETSOV 387 Study of the reaction of high-temperature H_2S decomposition on metal oxides (γ-Al_2O_3, α-Fe_2O_3, V_2O_5)

I.P. JAIN and M.I.S. ABU DAKKA 395 Hydrogen absorption–desorption isotherms of $La_{(28.9)}Ni_{(67.55)}Si_{(3.55)}$

G. LEE, J.S. KIM, Y.M. KOO and S.E. KULKOVA	403	The adsorption of hydrogen on B2 TiFe surfaces
V. SITARAM, N. MANI, T.R. KESAVAN and S. RAMAPRABHU	413	Hydrogen storage studies in $Zr_{0.9}Ho_{0.1}MnFe_{0.5}Co_{0.5}$ and $Zr_{0.9}Ho_{0.1}MnFe_{0.5}Ni_{0.5}$
S. M. PHILIPOSE, N. MANI, T.R. KESAVAN and S. RAMAPRABHU	419	Investigations of hydrogen storage properties in certain Zr-based AB_2 alloys
K. AWASTHI, R. KAMALAKARAN, A.K. SINGH and O.N. SRIVASTAVA	425	Ball-milled carbon and hydrogen storage
N.H. GOO and K.S. LEE	433	The electrochemical hydriding properties of Mg–Ni–Zr amorphous alloy
W.X. CHEN, Z.D. XU and J.P. TU	439	Electrochemical investigations of activation and degradation of hydrogen storage alloy electrodes in sealed Ni/MH battery
C-H. LEE, C.-W. LEE, D.-I. KIM and S.-E. BAE	445	Characteristics of methanol oxidation on Pt–Ru catalysts supported by HOPG in sulfuric acid
O. SOLORZA-FERIA and S. DURÓN	451	Temperature effects for oxygen reduction on Ru-nanoparticles in acid solution
R. RIVERA-NORIEGA, N. CASTILLO-HERNÁNDEZ, A.B. SOTO-GUZMÁN and O. SOLORZA-FERIA	457	Oxygen reduction on Ru_xFe_y cluster electrocatalyst in acid electrolyte
T. MONTIEL-SANTILLÁN, O. SOLORZA-FERIA and H. SÁNCHEZ-SORIANO	461	Tellurium electrodeposition like a precursor to prepare the *p*-CdTe semiconductor
Book reviews		
M.V.C. SASTRI	465	The Phoenix project: shifting from oil to hydrogen, 2nd Edition Harry Braun; SPI Publications, Phoenix, AZ, USA, 2000, xv + 365 pp.
Announcements	467	Hydrogen Energy Progress XII
	468	Hydrogen Energy Progress XIII
	469	Solar Hydrogen Energy
	470	Eurosummer School: Sustainability Assessment of Hydrogen Energy Systems
	471	Market Challenges of Fuel Cell Commercialisation 11 th Solar Paces International Symposium
	472	11th Solar Paces International Symposium
	473	XIV World Hydrogen Energy Conference
	474	4th International Symposium on Electrocatalysis-From Theory to Industrial Applications (ECS OZ), Como, Italy, 22-25 September 2002

475 Biohydrogen 2002

476 Our Future is Hydrogen

477 International Association for Hydrogen Energy

NUMBER 5

L.M. DAS 479 Near-term introduction of hydrogen engines for automotive and agricultural application

H. CHEN, J.M. WANG, T. PAN, H.M. XIAO, J.Q. ZHANG and C.N. CAO 489 Effects of coprecipitated zinc on the structure and electrochemical performance of Ni/Al-layered double hydroxide

W. QIKUN, Z. CHANGCHUN, L. WEIHUA and W. TING 497 Hydrogen storage by carbon nanotube and their films under ambient pressure

Y. ZHANG, L.-X. CHEN, Y.-Q. LEI and Q.-D. WANG 501 The reduction of cycling capacity degradation of Mg–Ni-based electrode alloys by Fe substitution

G.F. MCLEAN, T. NIET, S. PRINCE-RICHARD and N. DJILALI 507 An assessment of alkaline fuel cell technology

M. DI GIULIO, E. FILIPPO, D. MANNO and V. NASSISI 527 Analysis of nuclear transmutations observed in D- and H-loaded Pd films

R.L. MILLS and P. RAY 533 Vibrational spectral emission of fractional-principal-quantum-energy-level hydrogen molecular ion

R.L. MILLS 565 The grand unified theory of classical quantum mechanics

Announcements

591 Hydrogen Energy Progress XII

592 Hydrogen Energy Progress XIII

593 Solar Hydrogen Energy

594 Market Challenges of Fuel Cell Commercialisation

595 11th Solar Paces International Symposium

596 XIV World Hydrogen Energy Conference

597 4th International Symposium on Electrocatalysis-From Theory to Industrial Applications (ECS 02), Como, Italy, 22-25 September 2002

599 International Association for Hydrogen Energy

NUMBER 6

G.Y. JUNG, J.R. KIM, J.-Y. PARK and S. PARK	601	Hydrogen production by a new chemoheterotrophic bacterium *Citrobacter* sp. Y19
A. STEINFELD	611	Solar hydrogen production via a two-step water-splitting thermochemical cycle based on Zn/ZnO redox reactions
Y. AMAO, Y. TOMONOU, Y. ISHIKAWA and I. OKURA	621	Photoinduced hydrogen production with water-soluble zinc porphyrin and hydrogenase in nonionic surfactant micellar system
G. SHEELA, M. PUSHPAVANAM and S. PUSHPAVANAM	627	Zinc–nickel alloy electrodeposits for water electrolysis
M.G. SOBACCHI, A.V. SAVELIEV, A.A. FRIDMAN, L.A. KENNEDY, S. AHMED and T. KRAUSE	635	Experimental assessment of a combined plasma/catalytic system for hydrogen production via partial oxidation of hydrocarbon fuels
J.P. BINGUE, A.V. SAVELIEV, A.A. FRIDMAN and L.A. KENNEDY	643	Hydrogen production in ultra-rich filtration combustion of methane and hydrogen sulfide
R.L. MILLS, N. GREENIG and S. HICKS	651	Optically measured power balances of glow discharges of mixtures of argon, hydrogen, and potassium, rubidium, cesium, or strontium vapor
R.L. MILLS, A. VOIGT, P. RAY, M. NANSTEEL and B. DHANDAPANI	671	Measurement of hydrogen Balmer α line broadening and thermal power balances of noble gas-hydrogen discharge plasmas
F.A. LEWIS, K. KANDASAMY and X.Q. TONG	687	Lattice strain gradient effects on hydrogen diffusion parameter calculations
Y.L. DU, X.G. YANG, Y.Q. LEI and M.S. ZHANG	695	Hydrogen storage properties of $Zr_{0.8}Ti_{0.2}(Ni_{0.6}Mn_{0.3-x}V_{0.1+x}Cr_{0.05})_2$ ($x = 0.0, 0.05, 0.15, 0.2$) alloys
C.-J. TSENG	699	Effects of hydrogen addition on methane combustion in a porous medium burner
Announcements	709	Hydrogen Energy Progress XIII
	710	Market Challenges of Fuel Cell Commercialisation
	711	4th International Symposium on Electrocatalysis — From Theory to Industrial Applications (ECS'02), Como, Italy, 22–25 September 2002
	713	International Association for Hydrogen Energy

NUMBER 7–8

T.N. VEZIROGLU	715	Importance of HTM conferences for future of Hydrogen Economy
V.A. GOLTSOV	717	Hymn to hydrogen
V.A. GOLTSOV and T.N. VEZIROGLU	719	A step on the road to Hydrogen Civilization
V.A. GOLTSOV	725	Memorandum on the transition from the fossil system to hydrogen economy and then to hydrogen civilization
V.A. GOLTSOV	727	Agreement on Cooperation and Coordination of Activities on Hydrogen Economy Problems and Prospects
V.A. GOLTSOV	729	Minutes No. 1 of the First Business Meeting on the Agreement on Cooperation and Coordination of Activities on Hydrogen Economy Problems and Prospects
J.O'M. BOCKRIS	731	The origin of ideas on a Hydrogen Economy and its solution to the decay of the environment
J.L. APREA	741	Hydrogen and hydrogen isotopes handling experience in heavy water production and related industries
A. DOMASHENKO, A. GOLOVCHENKO, YU. GORBATSKY, V. NELIDOV and B. SKORODUMOV	753	Production, storage and transportation of liquid hydrogen. Experience of infrastructure development and operation
M.V. GOLTSOVA, YU.A. ARTEMENKO, G.I. ZHIROV and V.I. ZAITSEV	757	Video-investigation of reverse hydride transformations in the Pd–H system
V.A. GOLTSOV, A.G. VASILJEV, N.N. VLASENKO and D. FRUCHART	765	Kinetics of hydrogen-induced diffusion phase transformation in binary and pseudobinary intermetallic compounds $Tb_{1-X}Dy_XFe_2$
H. YOSHIMURA and J. NAKAHIGASHI	769	Ultra-fine-grain refinement and superplasticity of titanium alloys obtained through protium treatment
M.A. MURZINOVA, G.A. SALISHCHEV and D.D. AFONICHEV	775	Formation of nanocrystalline structure in two-phase titanium alloy by combination of thermohydrogen processing with hot working
O.M. KANUNNIKOVA, F.Z. GILMUTDINOV and A.A. SHAKOV	783	Interaction of lead silicate glasses with hydrogen under heating
O.A. EL KEBIR and A. SZUMMER	793	Comparison of hydrogen embrittlement of stainless steels and nickel-base alloys
O.D. SMIYAN, G.M. GRIGORENKO and A.B. VAINMAN	801	Effect of hydrogen on corrosion damage of metal of the high-pressure energetic boiler drum

A.N. KUZYUKOV, YU.YA. NIKHAYENKO, V.A. LEVCHENKO, V.A. BORISENKO and V.G. MOISA	813	How hydrogen affects operability of chemical and petrochemical equipment made of carbon and low alloy steel
S.V. IVANOVA	819	Effect of hydrogen on serviceability of zirconium items in VVER and RBMK-type reactors fuel assemblies
L.I. SMIRNOV and D.A. PRONCHENKO	825	Chemical potential and phase diagrams of hydrogen in palladium
YU. TYURIN and I. CHERNOV	829	Non-equilibrium release of atomic hydrogen from metals under irradiation
N.M. VLASOV and I.I. FEDIK	839	Hydrogen segregation in the area of three-fold junctions of grain boundaries
V.A. GOLTSOV	845	Progress in hydrogen treatment of materials
V.A. GOLTSOV	853	Lewis effect
Announcements	I	Hydrogen Energy Progress XIII
	II	Encyclopedia of Life Support Systems
	III	International Association for Hydrogen Energy

NUMBER 9

K. YAMANE	855	Obituary: Professor Shoichi Furuhama (1922–2002)
D.S. SCOTT	857	Why are we out here?
S.-H. LIU and H. P. WANG	859	Photocatalytic generation of hydrogen on Zr-MCM-41
J. AKIKUSA and S.U.M. KHAN	863	Photoelectrolysis of water to hydrogen in p-SiC/Pt and p-SiC/n-TiO_2 cells
M.R. GENNERO DE CHIALVO and A.C. CHIALVO	871	Analysis of an unusual behavior of the hydrogen evolution reaction: two Tafelian regions with equal slope
A.K.M. FAZLE KIBRIA and S.A. TARAFDAR	879	Electrochemical studies of a nickel–copper electrode for the oxygen evolution reaction (OER)
N.K. SINGH, B. LAL and R.N. SINGH	885	Electrocatalytic properties of perovskite-type $La_{1-x}Sr_xMnO_3$ obtained by a novel sol–gel route for O_2 evolution in KOH solutions
N.K. SINGH, J.P. SINGH and R.N. SINGH	895	Sol–gel-derived spinel Co_3O_4 films and oxygen evolution: Part II. Optimization of preparation conditions and influence of the nature of the metal salt precursor

Y.K. VIJAY, S. WATE, N.K. ACHARYA and J.C. GARG — 905 — The titanium-coated polymeric membranes for hydrogen recovery

S. BOUARICHA, J. HUOT, D. GUAY and R. SCHULZ — 909 — Reactivity during cycling of nanocrystalline Mg-based hydrogen storage compounds

J.K. LOMNESS, M.D. HAMPTON and L.A. GIANNUZZI — 915 — Hydrogen uptake characteristics of mechanically alloyed mixtures of Ti–Mg–Ni

N.M. VLASOV and I.I. FEDIK — 921 — Hydrogen segregation in the area of threefold junctions of grain boundaries

R.L. MILLS and P. RAY — 927 — Spectroscopic identification of a novel catalytic reaction of rubidium ion with atomic hydrogen and the hydride ion product

H.S. YOUN, H. RYU, T.-H. CHO and W.-K. CHOI — 937 — Purity enhancement and electrochemical hydrogen storage property of carbon nanofibers grown at low temperature

J.-G. PARK, S.-C. HAN, H.-Y. JANG, S.-M. LEE, P.S. LEE and J.-Y. LEE — 941 — The development of compressor-driven metal hydride heat pump (CDMHHP) system as an air conditioner

D. CHARTOUNI, N. KURIYAMA, T. KIYOBAYASHI and J. CHEN — 945 — Metal hydride fuel cell with intrinsic capacity

L.M. DAS — 953 — Hydrogen engine: research and development (R&D) programmes in Indian Institute of Technology (IIT), Delhi

R.L. MILLS, J. DONG, W. GOOD, P. RAY, J. HE and B. DHANDAPANI — 967 — Measurement of energy balances of noble gas–hydrogen discharge plasmas using Calvet calorimetry

Book review

M.V.C. SASTRI — 979 — Our future is hydrogen: energy, environment and economy

Announcements

981 — Hydrogen Energy Progress XIII

982 — Market Challenges of Fuel Cell Commercialisation

983 — International Association for Hydrogen Energy

NUMBER 10

D.S. SCOTT — 985 — Entropy

T. BAK, J. NOWOTNY, M. REKAS and C.C. SORRELL — 991 — Photo-electrochemical hydrogen generation from water using solar energy. Materials-related aspects

H. KANEKO, N. KOJIMA, N. HASEGAWA, M. INOUE, R. UEHARA, N. GOKON, Y. TAMAURA and T. SANO	1023	Reaction mechanism of H_2 generation for $H_2O/Zn/Fe_3O_4$ system
Y. KOJIMA, K.-I. SUZUKI, K. FUKUMOTO, M. SASAKI, T. YAMAMOTO, Y. KAWAI and H. HAYASHI	1029	Hydrogen generation using sodium borohydride solution and metal catalyst coated on metal oxide
A. MIDILLI, M. DOGRU, G. AKAY and C.R. HOWARTH	1035	Hydrogen production from sewage sludge via a fixed bed gasifier product gas
J. HAN, I.-S. KIM and K.-S. CHOI	1043	High purity hydrogen generator for on-site hydrogen production
K. ALDAS, M.D. MAT and Y. KAPLAN	1049	A three-dimensional mathematical model for absorption in a metal hydride bed
R. TANG and Y. LIU	1057	Study of the structure and the electrochemical properties of $Ml(NiCoMgAl)_{5.1-x}Zn_x$ hydrogen storage alloy
D.V. SCHUR, B.P. TARASOV, S.Y. ZAGINAICHENKO, V.K. PISHUK, T.N. VEZIROGLU, Y.M. SHUL'GA, A.G. DUBOVOI, N.S. ANIKINA, A.P. POMYTKIN and A.D. ZOLOTARENKO	1063	The prospects for using of carbon nanomaterials as hydrogen storage systems
C.-C. YANG	1071	Synthesis and characterization of active materials of $Ni(OH)_2$ powders
P. MUTHUKUMAR, M.P. MAIYA and S.S. MURTHY	1083	Parametric studies on a metal hydride based single stage hydrogen compressor
D.M. KABAT and J.W. HEFFEL	1093	Durability implications of neat hydrogen under sonic flow conditions on pulse-width modulated injectors
A.E. LUTZ, R.S. LARSON and J.O. KELLER	1103	Thermodynamic comparison of fuel cells to the Carnot cycle
Announcements	1113	Hydrogen Energy Progress XIII
	1114	The 6th International Conference, BEXCO
	1115	Market Challenges of Fuel Cell Commercialisation
	1116	4th Int. Symp. Electrocatalysis (ECS,02)
	1117	1st Int. Symp. on Process Intensification and Miniaturisation
	1118	energyinfo.net
	1119	Science direct
	1121	International Association for Hydrogen Energy

NUMBER 11, 12

Editorial	1123	Biohydrogen 2002
J.W. GOSSELINK	1125	Pathways to a more sustainable production of energy: sustainable hydrogen—a research objective for Shell
R. WÜNSCHIERS and P. LINDBLAD	1131	Hydrogen in education—a biological approach
J.W. VAN GROENESTIJN, J.H.O. HAZEWINKEL, M. NIENOORD and P.J.T. BUSSMANN	1141	Energy aspects of biological hydrogen production in high rate bioreactors operated in the thermophilic temperature range
V.V. TEPLYAKOV, L.G. GASSANOVA, E.G. SOSTINA, E.V. SLEPOVA, M. MODIGELL and A.I. NETRUSOV	1149	Lab-scale bioreactor integrated with active membrane system for hydrogen production: experience and prospects
T.-M. LIANG, S.-S. CHENG and K.-L. WU	1157	Behavioral study on hydrogen fermentation reactor installed with silicone rubber membrane
J.-S. CHANG, K.-S. LEE and P.-J. LIN	1167	Biohydrogen production with fixed-bed bioreactors
J.M. GORDON	1175	Tailoring optical systems to optimized photobioreactors
P.C. HALLENBECK and J.R. BENEMANN	1185	Biological hydrogen production; fundamentals and limiting processes
I. AKKERMAN, M. JANSSEN, J. ROCHA and R.H. WIJFFELS	1195	Photobiological hydrogen production: photochemical efficiency and bioreactor design
F.A.L. PINTO, O. TROSHINA and P. LINDBLAD	1209	A brief look at three decades of research on cyanobacterial hydrogen evolution
A. MELIS	1217	Green alga hydrogen production: progress, challenges and prospects
L. COURNAC, F. MUS, L. BERNARD, G. GUEDENEY, P. VIGNAIS and G. PELTIER	1229	Limiting steps of hydrogen production in *Chlamydomonas reinhardtii* and *Synechocystis* PCC 6803 as analysed by light-induced gas exchange transients
A. TSYGANKOV, S. KOSOUROV, M. SEIBERT and M.L. GHIRARDI	1239	Hydrogen photoproduction under continuous illumination by sulfur-deprived, synchronous *Chlamydomonas reinhardtii* cultures
T.V. LAURINAVICHENE, I.V. TOLSTYGINA, R.R. GALIULINA, M.L. GHIRARDI, M. SEIBERT and A.A. TSYGANKOV	1245	Dilution methods to deprive *Chlamydomonas reinhardtii* cultures of sulfur for subsequent hydrogen photoproduction
J.K. HORNER and M.A. WOLINSKY	1251	A power-law sensitivity analysis of the hydrogen-producing metabolic pathway in *Chlamydomonas reinhardtii*

J.E.W. Polle, S. Kanakagiri, E. Jin, T. Masuda and A. Melis	1257	Truncated chlorophyll antenna size of the photosystems—a practical method to improve microalgal productivity and hydrogen production in mass culture
J.H. Yoon, S.J. Sim, M.-S. Kim and T.H. Park	1265	High cell density culture of *Anabaena variabilis* using repeated injections of carbon dioxide for the production of hydrogen
P. Lindblad, K. Christensson, P. Lindberg, A. Fedorov, F. Pinto and A. Tsygankov	1271	Photoproduction of H_2 by wildtype *Anabaena* PCC 7120 and a hydrogen uptake deficient mutant: from laboratory experiments to outdoor culture
O. Troshina, L. Serebryakova, M. Sheremetieva and P. Lindblad	1283	Production of H_2 by the unicellular cyanobacterium Gloeocapsa alpicola CALU 743 during fermentation
P. Lindberg, K. Schütz, T. Happe and P. Lindblad	1291	A hydrogen-producing, hydrogenase-free mutant strain of *Nostoc punctiforme* ATCC 29133
I.-B. Ko and T. Noike	1297	Use of blue optical filters for suppression of growth of algae in hydrogen producing non-axenic cultures of Rhodobacter sphaeroides RV
T. Kondo, M. Arakawa, T. Wakayama and J. Miyake	1303	Hydrogen production by combining two types of photosynthetic bacteria with different characteristics
C.-M. Lee, P.-C. Chen, C.-C. Wang and Y.-C. Tung	1309	Photohydrogen production using purple nonsulfur bacteria with hydrogen fermentation reactor effluent
H. Koku, İnci Eroğlu, U. Gündüz, M. Yücel and L. Türker	1315	Aspects of the metabolism of hydrogen production by *Rhodobacter sphaeroides*
S. Hoekema, M. Bijmans, M. Janssen, J. Tramper and R.H. Wijffels	1331	A pneumatically agitated flat-panel photobioreactor with gas re-circulation: anaerobic photoheterotrophic cultivation of a purple non-sulfur bacterium
F.R. Hawkes, R. Dinsdale, D.L. Hawkes and I. Hussy	1339	Sustainable fermentative hydrogen production: challenges for process optimisation
H. Zhu, S. Ueda, Y. Asada and J. Miyake	1349	Hydrogen production as a novel process of wastewater treatment—studies on tofu wastewater with entrapped *R. sphaeroides* and mutagenesis
H. Yu, Z. Zhu, W. Hu and H. Zhang	1359	Hydrogen production from rice winery wastewater in an upflow anaerobic reactor by using mixed anaerobic cultures
T. Noike, H. Takabatake, O. Mizuno and M. Ohba	1367	Inhibition of hydrogen fermentation of organic wastes by lactic acid bacteria

Y.-K. Oh, E.-H. Seol, E.Y. Lee and S. Park	1373	Fermentative hydrogen production by a new chemoheterotrophic bacterium *Rhodopseudomonas Palustris* P4
T. de Vrije, G.G. de Haas, G.B. Tan, E.R.P. Keijsers and P.A.M. Claassen	1381	Pretreatment of *Miscanthus* for hydrogen production by *Thermotoga elfii*
E.W.J. van Niel, M.A.W. Budde, G.G. de Haas, F.J. van der Wal, P.A.M. Claassen and A.J.M. Stams	1391	Distinctive properties of high hydrogen producing extreme thermophiles, *Caldicellulosiruptor saccharolyticus* and *Thermotoga elfii*
Y. Nakashimada, M.A. Rachman, T. Kakizono and N. Nishio	1399	Hydrogen production of *Enterobacter aerogenes* altered by extracellular and intracellular redox states
P.-C. Maness and P.F. Weaver	1407	Hydrogen production from a carbon-monoxide oxidation pathway in *Rubrivivax gelatinosus*
A. Dubini, R.L. Pye, R.L. Jack, T. Palmer and F. Sargent	1413	How bacteria get energy from hydrogen: a genetic analysis of periplasmic hydrogen oxidation in *Escherichia coli*
T. Flynn, M.L. Ghirardi and M. Seibert	1421	Accumulation of O_2-tolerant phenotypes in H_2-producing strains of *Chlamydomonas reinhardtii* by sequential applications of chemical mutagenesis and selection
M. Winkler, A. Hemschemeier, C. Gotor, A. Melis and T. Happe	1431	[Fe]-hydrogenases in green algae: photofermentation and hydrogen evolution under sulfur deprivation
P.M. Vignais, L. Cournac, E.C. Hatchikian, S. Elsen, L. Serebryakova, N. Zorin and B. Dimon	1441	Continuous monitoring of the activation and activity of [NiFe]-hydrogenases by membrane-inlet mass spectrometry
A. Volbeda, Y. Montet, X. Vernède, E.C. Hatchikian and J.C. Fontecilla-Camps	1449	High-resolution crystallographic analysis of *Desulfovibrio fructosovorans* [NiFe] hydrogenase
K.L. Kovács, B. Fodor, Á.T. Kovács, G. Csanádi, G. Maróti, J. Balogh, S. Arvani and G. Rákhely	1463	Hydrogenases, accessory genes and the regulation of [NiFe] hydrogenase biosynthesis in *Thiocapsa roseopersicina*
H. Masukawa, M. Mochimaru and H. Sakurai	1471	Hydrogenases and photobiological hydrogen production utilizing nitrogenase system in cyanobacteria
J. Mishra, N. Kumar, A.K. Ghosh and D. Das	1475	Isolation and molecular characterization of hydrogenase gene from a high rate of hydrogen-producing bacterial strain *Enterobacter cloacae* IIT-BT 08
D.-J. Qian, S.-O. Wenk, C. Nakamura, T. Wakayama, N. Zorin and J. Miyake	1481	Photoinduced hydrogen evolution by use of porphyrin, EDTA, viologens and hydrogenase in solutions and Langmuir–Blodgett films

S.-O. WENK, D.-J. QIAN, T. WAKAYAMA, C. NAKAMURA, N. ZORIN, M. RÖGNER and J. MIYAKE 1489 Biomolecular device for photoinduced hydrogen production

T. WAKAYAMA and J. MIYAKE 1495 Light shade bands for the improvement of solar hydrogen production efficiency by *Rhodobacter sphaeroides* RV

S.V. MOROZOV, P.M. VIGNAIS, L. COURNAC, N.A. ZORIN, E.E. KARYAKINA, A.A. KARYAKIN and S. COSNIER 1501 Bioelectrocatalytic hydrogen production by hydrogenase electrodes

Announcements

1507 Hydrogen Energy Progress XIII

1508 IEEES-2003

1509 Fuel Cell 2003

1510 EnerEnv'2003

1511 Japenese- Solar-Hydrogen Energy

1512 EOLSS

1513 International Association for Hydrogen Energy

I Volume Contents and Author Index